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ABSTRACT

This study was conducted to investigate the feasibility of software packages for use in Texas vocational agriculture programs and to recommend strategies for future inservice educational needs of vocational agriculture teachers. The population surveyed comprised the nine teacher education programs in agricultural education in Texas, in which persons were contacted by telephone and by questionnaire, with a 100 percent return. Two software packages developed by Texas Tech University Agricultural Education personnel in cooperation with the Texas Education Agency were evaluated by 50 vocational agriculture teachers. Finally, two additional software packages, which were in greatest demand across the state according to data gathered in a teacher survey, were developed. Some of the conclusions of the study were the following: (1) universities currently providing or planning to provide computer inservice workshops used or will use instructors primarily from within their own university; (2) more than half the computers used by the universities in inservice workshops were Radio Shack models; (3) four basic categories of software are or will be used in inservice workshops; and (4) most software is obtained from commercial sources. The study recommended that a committee be formed to determine format and outline of content to be used in computer-related workshops and to acquire software to be used in each curriculum area. (KC)

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Microcomputer Software for Selected Areas of Agricultural Education in Secondary Schools

TEXAS TECH UNIVERSITY
LUBBOCK, TEXAS

Final Report

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MICROCOMPUTER SOFTWARE FOR IDENTIFIED AREAS OF AGRICULTURAL EDUCATION IN SECONDARY SCHOOLS

June 30, 1985

F I N A L R E P O R T

for research performed in cooperation with the Research Coordinating Unit, Department of Occupational Education and Technology, Texas Education Agency, Austin, Texas

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CHAPTER I

INTRODUCTION

Need For Study

Computer literacy is especially important for students in vocational agriculture programs, since computers are used throughout the agricultural sector from the small family farms to the multi-national agricultural corporations. Vocational agriculture teachers must have instructional resources available and the expertise to prepare students with the computer skills necessary to gain entry level agricultural employment.

There is currently a large amount of software on the commercial market. Through feasibility studies it has been determined that good software packages may be prohibitive because of cost. Conversely, many economically priced software packages may not be adequate in substance or may not be compatible with the educational setting. Through this project, software was scrutinized through additional feasibility studies. Evaluation and development of appropriate software for use in vocational agriculture programs was accomplished. Priorities for software packages were based on a 1984 Texas Education Agency study entitled, "Integration of Computer Related Instruction in Texas Vocational Agriculture Programs."

Vocational agriculture teachers are beginning to understand the possibilities of using computers as instructional aids. However, there is still considerable awe of computers. According to Hallworth and Brebner (4), teachers seems to fear that the computer will make the classroom teacher obsolete. They point out that the fear is unfounded. The success or failure of any Computer Assisted Instruction depends primarily upon the teacher. Used as instructional tools, computers can provide more accurate, up-to-date information than would normally be available. Vocational agriculture teachers may use computers to simulate a situation which would not be feasible to bring into a classroom. Computer Assisted Instruction is also adaptable to individualized instruction, small group instruction, or for teaching an entire class; thus it can be helpful to both the slow learners and the accelerated students. When used appropriately by teachers, computers can actually improve knowledge retention and the speed at which learning occurs (3). The use of computers in vocational agricultural programs can be beneficial not only to the student but to the teacher as well.

Vocational agriculture teachers have traditionally sought information from different educational sources to update their teaching skills and agricultural competen-

cies. An important source of information utilized by vocational agriculture teachers has been inservice education, sponsored by personnel from the agricultural industry sector and college personnel from teacher education institutions.

The use of computers in agricultural industry and in the realm of education has prompted teachers to seek information relative to computer usage in their instructional programs. Vocational agriculture teachers, provided with appropriate inservice education, can more effectively utilize computers as instructional tools to supplement the more traditional classroom methods such as lecture and discussion. Inservice education has been required of vocational agriculture teachers to satisfy local school and state requirements. Computer inservice training has not been mandated for teachers, but microcomputer instruction has been added to the Texas state curriculum for students which will influence the necessity of teachers to obtain computer skills.

Inservice education for vocational agriculture teachers has been sponsored primarily by teacher education institutions. Vocational agriculture teachers have individually sought instruction on computer usage from many sources. College undergraduate and graduate courses are offered at universities, and university and industry sponsored inservice education has been made

available. However, the level of computer education and the curriculum material included by the various sponsoring agencies have not been identified. The computer equipment, hardware and software, and the curriculum used for inservice education need to be identified to enable Texas vocational agriculture teachers to standardize the delivery of computer related education to vocational agriculture students.

Purpose and Objectives of the Study

The purpose of this project was to investigate the feasibility of software packages for use in Texas vocational agriculture programs and to recommend strategies for future inservice educational needs of vocational agriculture teachers.

To address the purpose of this study, the following objectives were investigated.

1. To ascertain the software development priorities as determined by vocational agriculture teachers.

2. To determine common problems encountered by vocational agriculture students and teachers using software packages developed by personnel in the Agricultural Education Department, Texas Tech University, as a direct result of research sponsored by the Research Coordinating Unit, Texas Education Agency.

3. To determine what computer inservice training is being provided by agricultural teacher education institutions.

CHAPTER II

REVIEW OF LITERATURE

Impact of Technology

Vocational agriculture teachers must have instructional resources available to prepare students with the skills necessary to gain entry-level agricultural employment. Those skills are no longer limited to agricultural laborer type skills, but also include basic technological skills.

The impact of technology and the need for computer related instruction has been expressed through numerous sources within both the fields of industry and education. The Advisory Council for Technical-Vocational Education in Texas, in cooperation with the Texas Education Agency, recently addressed computer related issues in a Statewide Conference on High Technology (1). Conference topics addressed the need for educators to provide students opportunities to develop skills which would aid the students in future employment positions. Emphasis was given to development of teaching certain skills to fulfill an occupational objective rather than teaching from an abstract point of view.

A 1982 report by the Advisory Council for Technical-Vocational Education in Texas entitled, "Vocational

Education in Texas," (2) supports the need for vocational programs to revitalize the curriculum to include computer instruction. The report indicated that although computers are used in many schools as a classroom teaching aid, the extent and effectiveness of computer usage is not currently known. The Council recommended in the report that the State Board for Vocational Education should:

1. Conduct a statewide computer resource, utilization and needs survey of secondary and post secondary institutions as it relates to instruction.

2. Develop a plan of action for developing computer literacy among vocational personnel and students, and expand current micro-computer technology in the vocational education curriculum.

The need has been established for upgrading the Texas educational system through instruction and practical application regarding computers. New rule 19 of the Texas Administrator's Code (16) proposes the inclusion of computer related instruction in regular vocational programs in order to provide a well balanced curriculum. The need is further addressed in the proceedings of the USDA Joint Council which states, "Everything possible must be done to ensure that students in agriculture-related curriculums have computer skills" (10).

Research on the subject of microcomputer applications to education has been limited to date. A review of selected references indicated that educators are only beginning to view computers as a viable instructional aid. Vocational agriculture teachers and teacher educators in agricultural education departments have only recently become aware of the wide range of benefits a microcomputer can have on classroom instruction.

Several limiting factors exist which hinder the use of microcomputers in vocational agriculture classrooms (12). One major drawback has been the limited availability of microcomputers to vocational agriculture departments. Another problem has been the small amount of applicable software packages which have been developed for use in vocational agriculture courses. As vocational agriculture teachers begin to accept computers as beneficial instructional aids and begin to request microcomputers for use in their programs, the problem of computer availability should be reduced. However, according to Neason and Miller (11), "Teachers must be involved in preparing software for classroom use because computer programmers are not attuned to instructional processes." Eliminating these, as well as other limiting factors, should increase the use of microcomputers in vocational agriculture classes.

Computer Assisted Instruction

Computer Assisted Instruction (CAI) is, according to Hudson (6), "the use of the computer in either providing or assisting the instructional process." Over the past several years, any instructional process using the computer in the classroom has been termed CAI. Hudson categorized CAI into four classifications or modes. Each mode employed a different method students used to complete a program or problem.

The drill and practice mode has been used primarily for mathematics. The strategy was to simulate interaction between the student and the teacher in a homework assignment manner. Drill and practice exercises have been used to evaluate a student's comprehension of a specific learning sequence resulting from classroom instruction. Sleeman and Brown (8) criticized the drill and practice mode. They pointed out that the technique does not actually teach, but does provide a means of measuring the results of instruction performed by the teacher.

In the tutorial mode of CAI described by Hudson (6), the student would actually receive instruction from the computer. The instructor would be freed of instructional tasks and, while acting as a director and trouble-shooter for the student, would have more oppor-

tunity to interact with students on an interpersonal basis.

The dialogue mode, sometimes called problem solving, was designed to operate logically and to interact with the student, according to Hudson (6). A typical dialogue program would pose problems to the student, provide relevant data needed to solve the problem, perform calculations, then evaluate the student's efforts in solving the problem logically. The program would be able to interpret a student's reasoning in solving a problem and determine if the reasoning was sound.

The last mode of CAI described by Hudson (6) was the simulation mode. Operating under this mode, the computer would replicate a real situation or problem. The simulation mode has proven most effective in actually teaching the students. Students retained more of the learning from using the simulation mode than the other methods of CAI. According to studies by Hawkridge (5) the simulation mode has proven to be a very effective means of teaching vocational courses. Vocational instructors may use the simulation mode to bring into the classroom a situation which could not normally be represented due to time or other restraints.

Roles for Computers in Education

According to Taylor (15), there are three potential roles for computer usage in education. The most common role is the use of the computer as a tutor. Under this method the subject matter is presented to the students by the computer. The student responds to questions and the computer selects the next item based on the student's response. This method is especially useful in informational and reinforcement programs for remedial instruction. The second role is the use of the computer as a tool. This includes integrating programs and experiential programs. With this method the computer is used as an instructional aid to make up a part of a teaching unit. Using the computer as a tool, combined with other teaching methods, the instructor can better illustrate concepts beyond the scope of normal classroom instruction. Taylor's third role for computers in education is the role of tutee. This method requires the student to teach the computer. Simply stated, this method is actual programming by the student. According to Taylor, this role should be the ultimate goal of computer instruction for students. The tutee role requires the student to learn a computer language, develop an understanding of the subject matter and perhaps most importantly, to think logically.

Neason and Miller (11) explained that the best use for computers in vocational agriculture programs is in the tool role. Tool programs permit students to solve complex realistic problems by minimizing the need to focus on mathematical computations. The software available for use in vocational agriculture programs is oriented toward the agriculture industry. This software includes programs which are tools for record keeping and management decision making. Another advantage of the tool role for vocational agriculture is that one computer can be effectively used to teach an entire class. Effective use of the tutor or tutee roles would require a terminal for each student.

Kleene (9) determined that computers may be used effectively to teach an entire class, a small group, or an individual by using different types of CAI. Simulation programs and selected problem solving techniques work well when teaching a class. Kleene suggested using television monitors to increase visibility for all students. When teaching a small group, the simulation and problem solving modes have proven most effective. All types of CAI may be used effectively for individualized instruction.

Benefits of Computers in Education

After a 1983 study of midwestern farmers, Rodenstein (12) predicted that over the next five years farmers will buy close to one-half million computers. Those farmers will also be hiring employees with computer knowledge.

A University of Michigan study cited by Bracey (3) showed that students receiving CAI performed better on objective tests than students who did not receive Computer Assisted Instruction. The students with CAI averaged on the 63 percentile while the control group of students averaged only a 50 percentile. The study also yielded data showing that CAI improved retention and speed at which students learn a given amount of material. The researcher did conclude, however, that the way the computer is used is much more important than the fact that the computer was used.

There are certain positive social benefits from using computers as well, according to an Arizona State Univeristy study reported by Bracey (3). In a study of social outcomes from computer use in schools researchers concluded that students using computers felt more in control of themselves and their environment. Cooperation among students was increased as the students worked together to run a program. The students also showed

more motivation and interest in the content of the material being taught.

The Educational Testing Service performed a four year study of computer assisted instruction in California schools (3). CAI was determined to be an effective learning aid over both short and long term periods. That conclusion added credibility to the idea that computers' innovativeness does not wear off after a short period of time. It was also concluded that, unlike some other approaches to compensatory education, CAI could be easily replicated.

Hudson (7) presented several other values of using computers in education, especially vocational education. In a speech to the American Vocational Association, he stated the following:

1. Long term events could be studied in a shorter time period.
2. Simulation of real-life situations.
3. Variables in management problems could be easily changed.
4. Programs could be adapted to better fit local situations (7).

Software Selection

Educators often overlook the most important part of establishing effective computer use in education, accord-

ing to Huntington (8). Computers cannot be used to maximum capability without effective software. Huntington set forth two major guidelines which educators should follow in selecting software. Previewing software before purchasing is the first step to establishing a usable software library. The teacher should also evaluate the software's potential for adaptation to local applications.

Steinberg (14) established three areas of software review to which educators should be particularly attuned. The first area was the suitability of the lesson for the intended students. The programs should be designed at a difficulty level so as to be challenging to students, and yet be understandable and interesting as well. The teacher-reviewer should also note the quality of implementation of the features of CAI. Certain subjects lend themselves more to a certain mode of CAI than do other subjects; however, to motivate students, the programs should contain exercises in more than one mode. Steinberg's third area for software review was for the teacher to observe students using the software. Software should be designed in such a way that students would be able to understand and complete a program with very little teacher supervision.

CHAPTER III

METHODS AND PROCEDURES

Overview of Project

This project was conducted in three phases simultaneously. Phase I was comprised of a descriptive survey of microcomputer inservice education at the nine Teacher Education programs in Agricultural Education in Texas. Phase II involved additional field testing of software packages developed by personnel in the Department of Agricultural Education, Texas Tech University, as a direct result of research sponsored by the Research Coordinating Unit, Texas Education Agency. Phase III included a developmental process whereby software priorities as determined by vocational agriculture teachers were addressed.

Phase I

The Population

The population surveyed in this study was composed of Teacher Education programs in Agricultural Education in Texas.

Fig. 1 Nine Teacher Education Programs in Agricultural Education in Texas

There were nine Agricultural Education, Teacher Education departments in Texas during the 1984-1985 academic year. For this study, personal contact by telephone was made with appropriate personnel in each Department of Agricultural Education to explain the purpose of the study and to solicit participation. After the telephoning process was completed, questionnaires were mailed to each contact person within the respective teacher education institutions. The questionnaire included short answer, listing, and open-ended questions (see Appendix A). Teacher educators from nine departments returned completed questionnaires, yielding a 100 percent return.

Analysis of the data was accomplished by compiling the frequencies of the data. Data were primarily grouped by whether or not universities which have agricultural teacher education programs have provided or plan to provide computer inservice education.

Phase II

Two software packages developed by Texas Tech University Agricultural Education personnel in cooperation with the Texas Education Agency were evaluated by vocational agriculture teachers. A random sample of 50 vocational agriculture teachers were provided copies of the programs by Vocational Instructional Services (VIS), College Station, Texas. Comments were received by VIS and forwarded to the Department of Agricultural Education, Texas Tech University, for evaluation and product modification.

Phase III

Phase III involved the development of two additional software packages which according to a vocational agriculture teacher survey, were in greatest demand to meet the needs of vocational agriculture teachers and students across the state.

CHAPTER IV

DATA ANALYSIS

Phase I

Universities Providing Computer Inservice Education

Universities which provided computer inservice education utilized various personnel to conduct inservice workshops. It may be seen in Table 1 that the instructors were secured primarily from within the faculties of the universities, with one computer specialist utilized from a private source.

TABLE 1.
PROVISION OF INSTRUCTION FOR COMPUTER INSERVICE EDUCATION

INSTRUCTOR	Number
Agricultural Education Faculty	2
Faculty Agricultural	1
Computer Specialist	1
Faculty Other Than Agricultural	3

A total of six university faculty members provided computer instruction to teachers, with three being agricultural college faculty and three faculty from other colleges within the universities. A computer specialist from the private sector constituted the seventh instructor.

There were five teacher education programs that provided computer inservice education during the summers of 1983 and 1984. It has been shown in Table 2 that 259 teachers attended the computer inservice workshops.

TABLE 2.
TOTAL ENROLLMENT BY SEMESTER OF MOST RECENT COMPUTER INSERVICE TRAINING

UNIVERSITY	Number	Summer
Texas A&M University	100	1984
Tarleton State University	75	1983
Southwest Texas State University	46	1983
Texas Tech University	28	1984
Texas A&I University	10	1984
TOTAL	259	

Of the 259 teachers attending computer inservice workshops, the majority, 175, of the teachers attended two workshops. Two of the five universities have not conducted a computer inservice workshop in two years.

The universities which provided computer inservice education employed a variety of makes and models of computers. As has been shown in Table 3, there were four major brands of computers used, with various models of Radio Shack and Apple being utilized.

TABLE 3.
MAKES AND MODELS OF COMPUTERS USED
DURING COMPUTER INSERVICE TRAINING

COMPUTER MAKE & MODEL	Number
Radio Shack Model IV Radio Shack Model III Radio Shack Model 4-P Radio Shack Model 80	62
Apple Model IIE Apple Model II+	19
IBM Model PC	15
TI Model 80	20
TOTAL COMBINED	115

Three levels of training were offered to teachers by the five universities. As revealed in Table 4, all universities that conducted computer inservice education provided an introductory level of education.

TABLE 4.
LEVEL OF TRAINING PROVIDED DURING
COMPUTER INSERVICE TRAINING

LEVEL OF TRAINING	Number
Introductory	5
Intermediate	4
Advanced	2

Four of the five universities also provided an intermediate level of education, while only two universities provided advanced education.

Universities which provided computer inservice education had a limited number of terminals available for use by teachers. The number of terminals that were available at each university may be seen in Table 5.

TABLE 5.
NUMBER OF TERMINALS AVAILABLE DURING
COMPUTER INSERVICE TRAINING

UNIVERSITY	Number of Terminals
Texas A&I University	36
Texas Tech University	20
Southwest Texas State University	20
Tarleton State University	20
Texas A&M University	19
TOTAL	115

The universities had similar numbers of terminals available for the computer inservice workshop, with three universities having 20 computer terminals each. One university had 19, and the fifth university had 36 computer terminals available for the computer inservice workshop.

Universities which conducted computer inservice workshops utilized basically the same programs. As noted in Table 6, five categories of software were employed during the workshops.

TABLE 6.
TYPES OF SOFTWARE UTILIZED DURING
COMPUTER INSERVICE TRAINING

TYPES OF SOFTWARE	Number of Universities Using Software
Programming Language	3
Spreadsheets	3
Data Management	1
Word Processing	2
Other	2

Information from one university was not available.

Three universities used a programming language and spreadsheet software package, one university utilized a data management software package, two universities used a word processing software package, and two software packages were used from another area.

Universities obtained the software packages used during the workshop from various sources as indicated in Table 7.

TABLE 7.
SOURCE OF THE SOFTWARE USED DURING
COMPUTER INSERVICE TRAINING

SOURCE	Number of Universities
Commercial Program	4
Departmentally Developed Program	3
Other	2

The majority of the software used during the inservice workshops was obtained from commercial sources, with three teacher education programs supplying a portion of their own software. Two universities also utilized non-commercial sources to obtain software for their workshops.

A variety of curriculum areas was covered during the inservice workshops. As may be observed in Table 8, a total of six curriculum areas were covered during the workshops, plus one other area not under the basic curriculum guide.

TABLE 8.
CURRICULUM AREAS COVERED DURING
INSERVICE TRAINING

CURRICULUM AREA	Number of Universities Using Curriculum Area
Animal Science	2
Soil Science	1
Plant Science	1
Agricultural Mechanics	1
Agricultural Management	1
S. O. E. P.	2
Other	1

Information regarding curriculum areas covered during workshops was not available from three of the five teacher education programs. Both universities

which provided curriculum outlines covered Animal Science and Supervised Occupational Experience Program during workshops with the other curriculum areas being included by one university.

Universities that provided computer inservice education had the option of limiting enrollment in their workshops to specific vocational agriculture geographic areas. It should be noted in Table 9 that all universities elected not to limit their enrollment to specific areas.

TABLE 9.
UNIVERSITIES LIMITING ENROLLMENT

UNIVERSITY	LIMITED	UNLIMITED
Texas Tech University	0	1
Texas A&M University	0	1
Texas A&I University	0	1
Southwest Texas State University	0	1
Tarleton State University	0	1

Universities Planning to Provide Inservice Education

From the information received on returned questionnaires, it was indicated that two additional teacher education programs are planning to conduct a computer inservice workshop within two years.

The teacher educator institutions that are planning to conduct a computer inservice workshop and the year projected for the workshop are listed in Table 10.

TABLE 10.
TEACHER-EDUCATION INSTITUTIONS THAT ARE PLANNING TO CONDUCT COMPUTER RELATED INSERVICE EDUCATION

UNIVERSITIES	Year Planned For Computer Inservice Training
East Texas State University	1986
Prairie View A&M	1986

These two workshops being planned for the summer of 1986 include beginning and intermediate instruction.

Universities planning to provide computer inservice workshops will primarily use two makes of microcomputers as shown in Table 11.

TABLE 11.
MAKES AND MODELS OF COMPUTERS THAT WILL BE AVAILABLE FOR COMPUTER RELATED INSERVICE TRAINING

UNIVERSITY	Make & Model of Computer
East Texas State University	KayPro III
Prairie View A&M University	IBM PC or Compatible

Universities that are planning to conduct a computer inservice workshop intend to utilize various personnel to conduct the workshops. As has been revealed in Table 12, the workshop instructors will come from

with the universities' faculties, with the addition of one computer specialist from outside the university system.

TABLE 12.
PROVISION OF INSTRUCTION TO BE PROVIDED FOR COMPUTER INSERVICE TRAINING

INSTRUCTOR	Number
Agricultural Education Faculty	0
Other Agricultural Faculty	2
Computer Specialist	1
Other Faculty	0

Universities that are planning to conduct an inservice workshop will offer various levels of education to the teachers. It has been indicated in Table 13 that two levels of education will be offered. The levels of education to be provided will be introductory and intermediate, the two basic levels of computer inservice education.

TABLE 13.
PLANNED LEVELS OF INSTRUCTION FOR COMPUTER INSERVICE TRAINING

LEVEL OF TRAINING	Number
Introductory	2
Intermediate	2
Advanced	0

Universities that are planning to provide an inservice workshop will also utilize various types of software. Table 14 indicates the basic types of software to be used during the planned workshops.

TABLE 14.
TYPES OF SOFTWARE TO BE USED
DURING INSERVICE TRAINING

SOFTWARE	Number of Universities
Spreadsheet	2
Word Processing	1
Data Management	2
Programming Language	1

There will be a total of four types of software utilized by the universities during the inservice workshops. Both universities plan to include spreadsheet and data management software, with word processing and programming language software to be included in combination with the other software by only one university.

Several curriculum areas are planned to be included by the universities during the inservice workshop. Areas may be observed in Table 15.

TABLE 15.
CURRICULUM AREAS THAT WILL BE
COVERED DURING INSERVICE WORKSHOP

CURRICULUM AREA	Number of Universities
Animal Science	2
Plant Science	2
Soil Science	1
Agricultural Mechanics	1
Agricultural Management	2
S. O. E. P.	0
Leadership	0
Opportunities in Agriculture	1
Environmental Protection and Energy Conservation	0

A total of six curriculum areas will be included in the workshops, with three curriculum areas to be covered by both workshops, while the other three curriculum areas will be covered by only one university.

Universities that are planning to conduct a computer inservice workshop will utilize various types of software packages under each curriculum area. It may be seen in Table 16 that most of the software packages will be utilized in three curriculum areas. A total of ten programs will be utilized during the inservice workshops with seven of the programs being used in three curriculum areas.

TABLE 16.
TYPES OF PROGRAMS TO BE USED IN EACH
CURRICULUM AREA DURING INSERVICE WORKSHOPS

CURRICULUM AREA	Program	Number
Animal Science	Rations	2
	Breeding	1
Plant Science	Fertilizers	2
Soil Science	Land Use Evaluation	1
Agricultural Mechanics	Drainage	1
Agricultural Economics	Financial & Marketing Price Variations	2
S. O. E. P.		0
Leadership		0
Opportunities in Agriculture Careers		1
Environmental Protection & Energy Conservation		0

A total of ten programs will be utilized during the inservice workshops with seven of the programs being used in three curriculum areas.

Universities plan to obtain their software packages from various sources to conduct their inservice workshops. According to Table 17, there are two principal areas from which universities will obtain their software packages.

TABLE 17.
PLANNED SOURCES OF SORTWARE
FOR INSERVICE WORKSHOPS

SOURCES	Number
Commercial Software	1
Departmentally Developed Programs	0
Other	1

Neither of the universities planning computer inservice workshops will furnish any of their own software, nor will they use the same source to obtain software.

Universities that are planning to conduct a computer inservice workshop expect a relatively small enrollment. As has been indicated in Table 18, the enrollment will be limited. There will be a projected total of 30 teachers enrolled in the two workshops to be conducted by East Texas State University and Prairie View A&M University.

TABLE 18.
PROJECTED ENROLLMENT BY SEMESTER
FOR INSERVICE EDUCATION

UNIVERSITY	Number Enrolled	Semester
East Texas State University	15	Summer 1986
Prairie View A&M University	15	Summer 1986

Universities planning to provide a computer inservice workshop also have the option of limiting their enrollment to specific Vocational Agriculture geographic areas. It has been shown in Table 19 that both options were used.

TABLE 19.
PLANS FOR LIMITNG THE INSERVICE WORKSHOP TO SPECIFIC VOCATIONAL AGRICULTURE GEOGRAPHIC AREAS

UNIVERSITY	Not Limited	Limited
East Texas State University	1	
Prairie View A&M University		1

Phase II

Fifty vocational agriculture teachers were asked to evaluate the Radio Shack versions of the "SOEP Record Book for Vocational Agriculture" and the "Vocational Agriculture Inventory." These were specialized software packages which were not available through a commercial source, consequently development of these specialized and lengthy programs were undertaken through research sponsored by the Research Coordinating Unit, Texas Education Agency.

After vocational agriculture teachers had approximately two months to utilize each of the two programs, they were asked to comment on the two software packages, including making suggestions for improvement.

General comments were very supportive of the developmental effort and products thereof. Minor changes were incorporated to further enhance the quality of the products which are now available for purchase through Vocational Instructional Services, College Station, Texas.

Phase III

Due to the apparent success of software developed through a previous project sponsored by the Research Coordinating Unit, Texas Education Agency, it was determined that additional software which was needed for Texas Vocational Agriculture programs and was not available for purchase should be developed for Texas vocational agriculture teachers and students. The developmental effort would allow teachers to soon purchase additional software which was customized and adapted to special teaching needs at a price which was cost effective for vocational agriculture departments.

Two subject areas as determined by vocational agriculture teachers to be of highest priority were developed. First, an Apple version of the "Vocational Agriculture Record Book" program was developed and secondly, a "Carpentry" program to determine a bill of material was completed.

CHAPTER V

CONCLUSIONS AND RECOMMENDATIONS

From the information obtained from the universities that are providing or plan to provide a computer related inservice workshop, as well as information gained through Phase II and III of this project, the following conclusions and recommendations were developed.

Conclusions

1. The universities currently providing or planning to provide computer inservice workshops utilized or will utilize instructors primarily from within their own university system.

2. Over half the computers used by universities that have conducted an inservice workshop were Radio Shack models.

3. The majority of the universities that provide or plan to provide a computer related workshop utilize or will utilize the same basic levels of education.

4. The universities that provide or plan to provide an inservice workshop utilize or will utilize software packages from four basic categories of software.

5. Universities that provide computer inservice education use three sources to obtain their software, with most of the software obtained from commercial sources.

6. Five curriculum areas have been included or will be included by all universities that have provided or plan to provide an inservice workshop.

7. The universities that have provided a computer inservice workshop have made workshops available on a statewide basis.

8. The universities planning to provide an inservice workshop will utilize various types of programs relating to vocational agriculture curriculum areas.

Recommendations

1. There is a need to form a committee of Texas Education Agency officials, teacher education personnel, and vocational agriculture teachers, to establish a suggested format and outline to be used by universities providing computer related workshops.

2. The curriculum areas included in the computer workshop at each level of education and the programs used under each curriculum area should address the competencies needed for vocational agriculture.

3. The makes of hardware used during the computer inservice workshops should be standardized as much as possible. Future trends should be considered.

4. The software used in each curriculum area should be standardized or programs be written to allow users of various hardware to use similar software.

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APPENDIX A

QUESTIONNAIRES

Survey of Computer-Related Inservice Education
Provided By Teacher Education Institutions
for Vocational Agriculture Teachers

Please complete this questionnaire concerning computer related inservice training.

Summary of Inservice Computer Training

1. Who instructed the computer inservice training?

(Check all that apply)

A. Member of Agricultural Education Faculty ___

B. Other Faculty Member (give Dept.)

_____ ___

C. Computer Specialist from Company of

_____ ___

(Company Representative)_____ ___

D. Other (Please list) _____ ___

2. Give the total enrollment and semester of the last inservice training period_____

(Ex. 40 teachers-Summer 1984)

3. Give the makes and models of computers that were used during the inservice training. List all model numbers used. (Ex. Radio Shack Model IV)

A. Radio Shack, Model _____ ___

B. Apple, Model _____ ___

C. IBM, Model _____ ___

D. TI, Model _____ ___

E. Commodore, Model _____ ___

F. Other, Model _____ ___

4. During the inservice period, what level of training was provided? (Check all that apply)

A. Introductory ___
(Basic skills needed to operate the computer)
Comments:

B. Intermediate ___
(How to use programs already available)
Comments:

C. Advanced ___
(Develop own programs)
Comments:

5. Please give the number of terminals that were available for use during training. _____

6. What types of software were utilized during the inservice training? (Ex. Programming Language; BASIC)

A. Programming Language..... _____ ___

B. Spreadsheets..... _____ ___

C. Data Management..... _____ ___

D. Word Processing..... _____ ___

E. Other (Please specify)..... _____ ___

7. Give the source of the software used for inservice training. (Check all that apply)

A. Commercial Programs..... ___

B. Departmental Developed Programs..... ___

C. Others (Please specify)_____ ___

8. List the names of the programs used under each of the following curriculum areas and check the ones you recommend for computer inservice training. (Ex. Animal Science; Record Keeping) (Check all that apply)

A. Animal Science..... _____ ___

B. Soil Science..... _____ ___

C. Agricultural Mechanics..... _____ ___

D. Plant Science..... _____ ___

E. Agricultural Management..... _____ ___

F. S.O.E.P..... _____ ___

G. Leadership..... _____ ___

H. Opportunities in Agriculture.... _____ ___

I. Env. Protection & Energy Cons... _____ ___

J. Other (Please specify)..... _____ ___

9. Was the enrollment during the last inservice training limited to teachers in specific Vo. Ag. geographic areas?

Yes____ If yes, please list areas.

No ____

10. Does your department foresee any specific future needs for computer related inservice training? If so, what are they?

11. What would your department suggest to standardize computer related inservice training on a statewide basis?

12. Please list or send the outline for the workshop that is used during your inservice training.

Survey of Plans For Computer Related Inservice Education
To be Provided by Teacher Education Institutions
For Vocational Agriculture Teachers

If your department has not conducted computer related inservice training but plans to in the future, please complete the following questionnaire.

1. Does your department plan to conduct computer related inservice training?

   A. Yes____ Approximately what year?_____

   B. No ____ If no, please explain why?

2. When your department/college conducts the inservice training, what makes and models of microcomputers will be available for training? (Ex. Radio Shack Model IV) (Check all that apply)

   A. Radio Shack, Model_____ ___

   B. Apple, Model_____ ___

   C. IBM, Model_____ ___

   D. Commodore, Model_____ ___

   E. Other (Please specify)_____ ___

3. Who will conduct the inservice training? (Check all that apply)

   A. Agricultural Education Faculty Member..... ___

   B. Other Faculty Member (Give Dept.)_____ ___

   C. Computer Specialist or Company Representative..... ___

   D. Other (Please list)_____ ___

4. During the inservice training what levels of training do you plan to provide? (Check all that apply)

   A. Introductory ___
   (Basic skills need to operate the computer)
   Comments:

   B. Intermediate ___
   (How to use programs available commercially)
   Comments:

   C. Advanced ___
   (How to develop personal programs)
   Comments:

5. During inservice training what types of software will be used? (Ex. Word Processing; Scripsit)

   A. Spreadsheet..... _____

   B. Word Processing..... _____

   C. Data Management..... _____

   D. Programming Language..... _____

   E. Other (Please specify)_____ _____

   F. Undecided..... _____

6. What curriculum areas will be covered during the inservice training? (Check all that apply)

A. Animal Science..... ___
B. Plant Science..... ___
C. Soil Science..... ___
D. Agricultural Mechanics..... ___
E. Agricultural Management..... ___
F. S.O.E.P..... ___
G. Leadership..... ___
H. Opportunities in Agriculture..... ___
I. Env. Protection & Energy Cons..... ___
J. Other (Please specify)_____ ___
K. Undecided..... ___

7. Please list the names of the programs to be used under the following curriculum areas and check the ones you recommend for standardizing computer inservice training. (Ex. Animal Science, Rations)

A. Animal Science..... _____ ___
B. Plant Science..... _____ ___
C. Agricultural Mechanics..... _____ ___
D. Agricultural Economics..... _____ ___
E. Soil Science..... _____ ___
F. S.O.E.P..... _____ ___
G. Leadership..... _____ ___
H. Opportunities in Agriculture..... _____ ___
I. Env. Protection & Energy Cons.... _____ ___
J. Other (Please specify)_____ _____ ___
K. Undecided..... _____ ___

8. Where do you plan to obtain the software that will be used during the inservice training? (Check all that apply)

   A. Commercial Programs ____

   B. Departmental Developed Programs ____

   C. Other (Please specify) ____

9. Give the maximum number of teachers which you plan to enroll in each inservice training session. (Ex. 20 Teachers, Summer Session, 1985 Year)

10. Will the enrollment during the inservice training be limited to teachers in specific Vo. Ag. geographic areas?

    Yes____ Please list areas

    No ____

11. What would your department suggest to standardize computer related inservice training on a statewide basis?

12. Please list or send the outline that you plan to follow when conducting your computer inservice training.